

**Remarks/Arguments**

The Applicant respectfully request further examination and reconsideration in view of the above amendments and arguments set forth fully below. Claims 1, 8-27, 29-33, 35-131 were previously pending in the present application. Claims 9, 11, 15-18, 20-27, 33, 35-37, 39, 42, 43, 45-127 are withdrawn from consideration. By the above amendments, Claims 1 and 131 are amended, and new Claim 132 is added. Support for Claim 132 is found in Figure 21. No new matter have been added by these amendments to the claims. Accordingly, Claims 1, 8, 10, 12-14, 16, 17, 19, 29-32, 38, 40, 41, 44 and 128-131 are currently pending in this application.

On page 3 of the Office Action, it is stated that the prior Office Action is essentially repeated with annotations addressing the Applicant's most recent remarks. Indeed, the rejections are essentially repeated. The Applicant first addresses the Examiner's annotations within the Office Action before presenting arguments why the presently-claimed invention is novel and nonobvious in view of the cited prior art references.

On page 2 of the Office Action, it is stated that the Applicant in the previous response (mailed on July 9, 2009) did not disagree with the Examiner's statement (in the Office Action mailed on June 11, 2009) that Claim 1 is directed to the heat exchanger and that Claim 128 is directed to the heat exchanger in combination with a heat source, and, as such, it is therefore an established fact of this prosecution. The Applicant respectfully submits that since the rejection under §112 had been withdrawn in the Office Action mailed on June 11, 2009, the remarks presented in the response mailed on June 1, 2009 were sufficient and did not warrant further remarks by the Applicant.

On page 8 of the Office Action, it is stated that the Applicant ignored the rejection as it was written and proceeded to discuss structures found in Figure 22 of U.S. Patent No. 5,388,635 to Gruber et al. (hereafter "Gruber"). The Applicant respectfully submits that the rejection as it was written was **not** ignored. The rejection essentially directed the Applicant's attention to Figures 3, 4, 8A and 8B, which show a system for cooling a heat source. Although the Applicant referenced the part of the Gruber specification that is directed to Figure 22, the Applicant respectfully submits that Figures 3, 4, 8A, 8B and 22 show, although different views, in part or in whole, the same system. For example, Figure 4 shows a side elevation, partly in section, view through a supply duct and capillary of a cooling hat. Figure 22 shows a simplified perspective view of the cooling hat. Since Figure 22 shows an exploded view of the cooling hat, the Applicant referenced Figure 22 for graphical clarity.

Also on page 8 of the Office Action, it is stated that the Applicant's argument that Gruber does not teach that *the at least one inlet port is positioned substantially parallel with respect to the same plane as the conducting portion of the heat exchanger* is "incommensurate with the scope of the claim" because the Applicant "is not claiming a cylindrical port whose longitudinal axis in the direction of the cylindrical wall is parallel to the heat exchanger layer." Although the scope of the present independent Claim 1 does not include this limitation, the Applicant respectfully submits that Claim 8 does. The Applicant's remark was simply addressing Claim 8.

### **Claim Rejection – 35 U.S.C. §112**

Within the Office Action, Claim 131 is rejected under 35 U.S.C. §112, second paragraph. Specifically, it states that since the Applicant's fingers "are parallel to one other (at least in part)," it is not understood how the claim limitation of Claim 131 is descriptive of the disclosed structure. The Applicant respectfully disagrees.

It is acknowledged within the Office Action that only a part of the fingers are parallel. It therefore follows that fingers are **not** all in a parallel arrangement. As such, the claim limitation that the fingers are in a nonparallel arrangement is therefore indeed descriptive of the disclosed structure. However, to further prosecution, the Applicant amends Claim 131 to recite that *a first portion of the fingers is nonparallel to a second portion of the fingers*. The Applicant respectfully submits that the limitation of Claim 131 is definite and particularly points out and distinctly claims the subject matter which the Applicant regards as the invention.

### **Claim Rejections – 35 U.S.C. §103**

To establish a prima facie case of obviousness under §103, the prior art references must teach or suggest all the claim limitations. [MPEP 2143] The Applicant respectfully submits that none of the cited prior art references, alone or in combination, teach or suggest the claim limitation *the at least one inlet port directs fluid from an inlet channel coupled to the at least one port to a first set of fingers which branches from the inlet channel to a second set of fingers which branches from the first set of fingers and from the fingers to the heat exchanging layer via an intermediate layer with a plurality of conduits which extend therethrough*.

The Applicant has previously argued that Gruber, U.S. Patent No. 5,761,037 to Anderson et al. (hereafter "Anderson"), U.S. Patent No. 5,983,997 to Hou (hereafter "Hou"), U.S. Patent No. 5,239,200 to Messina et al. (hereafter "Messina"), Jiang et al. article "Thermal-Hydraulic performance of small scale micro-channel and porous-media heat exchangers" (hereafter

“Jiang”), U.S. Patent No. 4,896,719 to O’Neill (hereafter “O’Neill”), and U.S. Patent No. 6,680,044 to Tonkovich (hereafter “Tonkovich”), alone or in combination, do not teach that the inlet port directs fluid from an inlet channel coupled to the at least one port to fingers which branch out from the inlet channel. Applicant asserts that the substance of the arguments previously presented is still pertinent. However, for the sake of clarity and brevity, the Applicant now only discusses in detail Gruber and addresses the newly cited reference U.S. Patent No. 3,993,123 to Chu et al. (hereafter “Chu”).

Gruber teaches a cooling hat that has a first tier 216 which includes a supply port and a return port with associated duct segments, a second tier 218 which includes vias and supply channels and return channels, and a third tier 220 which includes a coldsheet with fins and grooves. [Gruber, col. 11, lines 40-44] The first tier 216 of Figure 22 corresponds to the supply port 28 and the supply duct segments 30 of Figure 8A. As illustrated, Gruber does **not** teach that *the at least one inlet port directs fluid from an inlet channel coupled to the at least one port to a first set of fingers which branch out from the inlet channel to a second set of fingers which branch out from the first set of fingers and from the fingers to the heat exchanging layer via an intermediate layer with a plurality of conduits which extend therethrough*. Instead, Gruber teaches that a plurality of supply ducts 30 are coupled to the supply port 28. Coolant flows through the cooling hat by first entering the supply port 28. The coolant simply divides into the plurality of supply ducts segments 30. [Gruber, col. 8, lines 56-60]

It is stated on page 7 of the Office Action that “Gruber discloses flow through an inlet port (28, Figures 8A and 8B) at the upper end of an inlet channel (no reference numeral), through a plurality of fingers (30), through a plurality of conduits (32 or 34) extending through an intermediate layer (18 or 16) to a heat exchanger layer (14). Below are Figures 8A and 8B of Gruber, where corresponding elements of the present invention are marked thereon based on the Examiner’s interpretation.

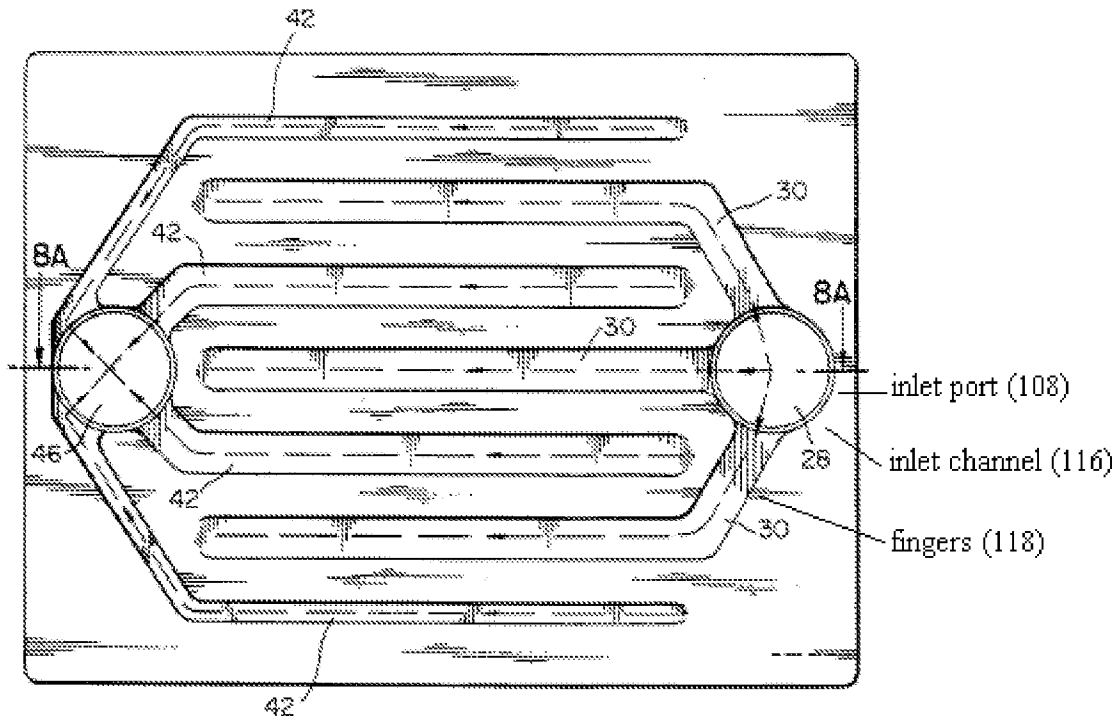


FIG. 8B

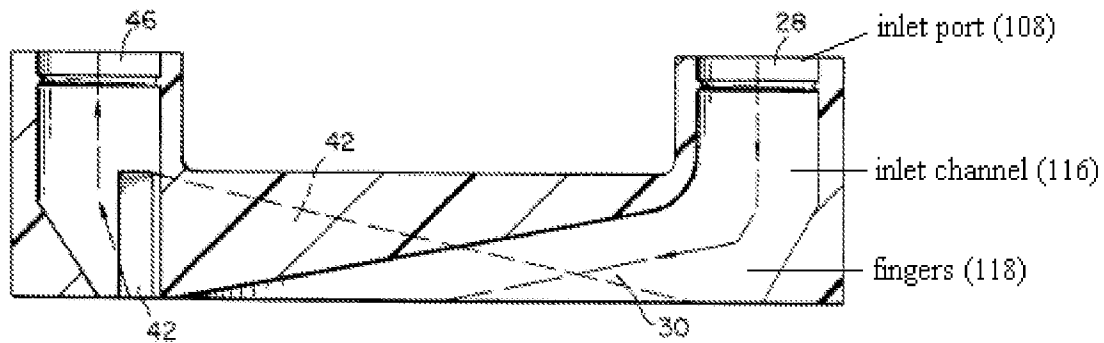


FIG. 8A

As is evident from the above annotations in the above Figure 8A and 8B, Gruber teaches one set of fingers that branches from the inlet channel. Gruber does not teach a second set of fingers that branches from a first set of fingers inlet channel. Accordingly, Gruber does **not** teach that *the at least one inlet port directs fluid from an inlet channel coupled to the at least one port to a first set of fingers which branches out from the inlet channel to a second set of fingers which*

*branches out from the first set of fingers and from the fingers to the heat exchanging layer via an intermediate layer with a plurality of conduits which extend therethrough.*

Chu teaches a gas encapsulated cooling module. [Chu, Title] Chu does not teach an apparatus for fluid delivery for cooling a heat producing device. Chu does **not** teach that *the at least one inlet port directs fluid from an inlet channel coupled to the at least one port to a first set of fingers which branches out from the inlet channel to a second set of fingers which branches out from the first set of fingers and from the fingers to the heat exchanging layer via an intermediate layer with a plurality of conduits which extend therethrough.*

Accordingly, neither Gruber, Anderson, Hou, Messina, Jiang, O'Neill, Tonkovich, Chu nor their combination (in part or together) teach the claim limitation *the at least one inlet port directs fluid from an inlet channel coupled to the at least one port to a first set of fingers which branches out from the inlet channel to a second set of fingers which branches out from the first set of fingers and from the fingers to the heat exchanging layer via an intermediate layer with a plurality of conduits which extend therethrough.* Since Claim 1 includes the claim limitation *the at least one inlet port directs fluid from an inlet channel coupled to the at least one port to a first set of fingers which branches out from the inlet channel to a second set of fingers which branches out from the first set of fingers and from the fingers to the heat exchanging layer via an intermediate layer with a plurality of conduits which extend therethrough* not taught by these cited prior art references, independent Claim 1 is therefore an allowable base.

Claims 8, 10, 12-14, 16, 17, 19, 29-32, 38, 40, 41, 44 and 128-131 are dependent on independent Claim 1. Since independent Claim 1 is an allowable base claim, Claims 8, 10, 12-14, 16, 17, 19, 29-32, 38, 40, 41, 44 and 128-131 are all also allowable as being dependent upon an allowable base claim.

### **New dependent Claim 132**

Claim 132 is dependent on independent Claim 1 and recites the claim limitation *the at least one inlet port, the inlet channel and the fingers are substantially planar.* Since independent Claim 1 is an allowable base claim, Claim 132 is also allowable as being dependent upon an allowable base claim. Furthermore, none of the cited prior art references teach that *the at least one inlet port, the inlet channel and the fingers are substantially planar.* For at least these reasons, Claim 132 is an allowable claim.

**Conclusion**

For the reasons given above, the Applicant respectfully submits that the claims are in a condition for allowance, and allowance at an early date would be appreciated. If the Examiner has any questions or comments, he is encouraged to call the undersigned at (408) 530-9700 so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,  
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